

THE NUTRITIONAL AND INDUSTRIAL POTENTIAL OF SOYBEANS

Dr. Herbert J. Dutton
Oilseed Crops Laboratory
Northern Regional Research Center
United States Department of Agriculture
Peoria, Illinois 61604

In considering oilseeds as new foods for tomorrow, one of our purposes is to look at them from the point of view of the end product user and to assess characteristics that (1) are desirable or (2) limit utilization, or (3) are needed for new and expanded outlets of oilseeds. While not a purpose, an undercurrent and recurrent theme concerns how we shall achieve these desired characteristics. "Shall we attempt to breed them?" or "Shall we attempt to try to effect them by processing treatments?" In addition, there is a basic issue that needs to be resolved, if possible, with regard to nutritional potentials: "How long can Homo sapiens afford to compete with farm animals for protein supplies?" Frequently, oilseed proteins can be made available both for animal and for direct human consumption.

In surveying plant seeds worldwide as a source of protein, soybeans rank well both among major economic crops and among those of the survey. Although it is generally agreed that soybeans are raised for their meal to meet protein requirements of U.S. animal feeding economy, the byproduct oil may at times be the more valuable. Due largely to research by government and academic groups, on the one hand, and corresponding implementation of research by industry on the other, soybean oil today performs satisfactorily in margarines, shortenings, and salad oils; as a high-temperature cooking oil more research is required and is underway.

The competition of domestic soybean oil and of imported palm oil in edible markets is fundamentally a competition of photosynthetic capabilities of the two plants in their temperate and tropical environments. Whereas soybeans may produce 400 pounds of oil per acre in Illinois, palm plants produce 10 times that amount in Malaysia with an attendant lower production cost. Thus photosynthesis has a direct and immediate impact on the price the Illinois farmer receives for his soybeans.